GREAT LAKES AIR DEPOSITION (GLAD) STRATEGY: PRIORITIES FOR U.S. EPA'S NATIONAL GEOGRAPHIC INITIATIVE GRANTS

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I. Purpose

This strategy is intended to guide the efforts of the United States Environmental Protection Agency (U.S. EPA) Region 5 Air and Radiation Division (ARD) and the eight Great Lakes states (Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin) in making decisions on the use of Great Lakes National Geographic Initiative funds over the next five years. The strategy identifies activities that are considered high priorities for addressing air deposition of pollutants of concern to the Great Lakes region. The strategy also provides U.S. EPA and the Great Lakes states with a framework for making and explaining decisions about program research directions, relative priorities, and resource distributions. ARD organized two meetings in the winter and spring of 2001 to receive valuable input and recommendations on the strategy from other U.S. EPA Offices and the Great Lakes States.

II. Great Lakes National Geographic Initiative

U.S. EPA's Office of Air and Radiation directly appropriates approximately $1.1 million of Clean Air Act section 105 National Priority Funds to Region 5 for disbursement on Great Lakes air toxics deposition projects, under the Great Lakes National Geographic Initiative. Activities under this Initiative support multi-media strategy development and assessment tools that assist in identifying the contribution and effects of deposition of persistent bioaccumulative toxic air pollutants to the Great Lakes region. Priority activities for these pollutants include source identification, the development of accurate and comprehensive emission inventories, monitoring, atmospheric dispersion and deposition modeling, assessment of long-range atmospheric transport to the Great Lakes region, and assessment of the effects on fish and wildlife. These activities are consistent with the goals of Annex 15 of the Great Lakes Water Quality Agreement, the Great Lakes Toxics Substances Control Agreement of 1986, the Great Lakes Binational Toxics Strategy, the Great Waters Program, and the Office of Water's Total Maximum Daily Load (TMDL) Program. The advancement of these priority activities is critical in establishing the basis to develop further regulations and strategies to minimize atmospheric loadings to the Great Lakes Region.

In the past, these funds have been used to support the Great Lakes Regional Air Toxics Emission Inventory project, the Lake Michigan Mass Balance Study, and other projects primarily focused on mercury transport and deposition.

III. Great Lakes Pollutants of Concern for Air Deposition

For purposes of this strategy, persistent bioaccumulative toxics (PBTs) that may be deposited to the Great Lakes region and the pollutants identified under other Great Lakes initiatives are

defined as pollutants of concern. This strategy focuses primarily on PBTs because of their persistence in the environment, potential to bioaccumulate, and toxicity to humans and the environment. The strategy priorities also encompass PBTs identified under other Great Lakes Initiatives including, but not limited to, the Great Waters Program, the Great Lakes Binational Toxics Strategy, the Great Lakes Water Quality Guidance (GLI), and the Lakewide Management Plans for each of the Great Lakes. In addition, other pollutants of concern may also be considered based on new and expanding scientific information regarding air deposition to the Great Lakes region.

IV. Great Lakes Air Deposition Strategy Priorities

The Great Lakes Air Deposition Strategy overarching principles are to: (1) better understand the impacts of deposition of pollutants of concern to all waterbodies in the Great Lakes region, (2) ensure continued progress in reducing sources and loadings of atmospheric deposition to the Great Lakes region, and (3) reduce the environmental and public health impacts associated with air emissions and subsequent atmospheric deposition.

The remainder of the strategy focuses on more specific priorities for addressing air deposition. These priorities can be separated into four categories that collectively support the strategy's three overarching principles identified above. The four categories are (1) Air Deposition and Source Characterization Monitoring, (2) Emissions Inventory Development and Emissions Factor Development, (3) Atmospheric and Multi-Media Modeling, and (4) Assessment of Effects to Aquatic Life and Wildlife. While each category is important on an individual basis, it is critical to balance efforts among the categories to achieve the overarching goals of the strategy. Therefore, this list of priorities is <u>not</u> a ranking system, but a list of action items.

PRIORITY ONE: Air Deposition and Source Characterization Monitoring

The strategy's air deposition monitoring priorities are to build the Great Lakes region's capacity to monitor for pollutants of concern to support trends studies, perform source apportionment analyses, calibrate atmospheric deposition models, evaluate emissions reductions strategies, and assess and characterize air emissions from sources.

The following activities are of particular interest:

- **Source characterization** - Employment of monitoring technology to improve understanding of PBT sources, particularly in urban or hot spot areas. Projects could involve stack tests, evaluation of area source emissions, and mass balance approaches such as measurement of PBTs in fuels and other materials. States, Tribes, and non-government organizations are encouraged to cooperate in the purchase of mobile monitoring equipment that can be shared.
- **Mercury Deposition Monitoring** - Evaluation of trends in mercury deposition is important, and will eventually be accomplished by the weekly wet deposition monitoring under the Mercury Deposition Network (MDN). Projects which duplicate mercury deposition monitoring performed by the MDN are not encouraged. Weekly wet

deposition monitoring is not a high priority under this strategy; however, projects will be considered if they provide coverage to a geographic area currently missed under the MDN. Projects are particularly encouraged if they will provide information about urban area impacts. Since monitoring of wet deposition trends requires a long-term commitment (e.g. five years), a grant recipient must provide a commitment to continue monitoring through other funding sources if initial start-up costs are funded under this initiative.

- **Dioxin Monitoring** - Projects to develop the capabilities within the Great Lakes region to monitor for dioxin to estimate atmospheric loadings, characterize effects, and identify sources.
- **Emerging Chemical Monitoring** - Projects to develop the capabilities within the Great Lakes region to monitor for emerging PBTs of concern to estimate atmospheric loadings, characterize effects, and identify sources.
- **Enhanced Mercury Deposition Monitoring** - Projects to enhance existing MDN sites in order to provide information about mercury sources are also encouraged. For instance, incorporation of event sampling and trace metals monitoring or mercury vapor monitoring at an MDN site could help identify the sources contributing most to mercury deposition. Projects that provide more intensive air deposition monitoring in conjunction with separately funded monitoring of water and biota in a sentinel watershed are particularly encouraged.
- **Dry Deposition of Mercury** - Projects to determine the importance of mercury dry deposition (particulate mercury and reactive gaseous mercury) to overall loadings. Projects will also be considered that assess the significance of the watershed in the transport and transformation of pollutants deposited over land.
- **Coordinated Multi-media Measurements** - Projects that integrate air, water, and biota measurements to better understand the concentrations, fate, and relationships of PBTs in the environment.
- **Sediment Cores** - The history of atmospheric deposition has been reconstructed from sediment cores of lakes with minimal watershed disturbance in Minnesota and the Adirondacks, but such information is missing from most of the Great Lakes region.
- **Speciated Stack Tests** - Projects to perform speciated stack tests on mercury emissions from coal combustors, incinerators (solid waste, medical, and sewage sludge), and electric arc furnaces.

PRIORITY TWO: Emissions Inventory Development and Emissions Factor Development

The strategy's emissions inventory priorities are to continue to build the capacity within the Great Lakes region to compile complete "bottom-up" emissions inventories on a triennial basis for point, area, and mobile sources. Emphasis should be placed on providing complete and comprehensive emissions inventories for the PBTs of concern for air deposition in the Great Lakes region. Emphasis should also be placed on developing model-ready emissions inventories.

The following activities are of particular interest:

- **Regional Emissions Inventory** - Projects to develop a complete and comprehensive triennial regional emissions inventory for point, area, and mobile sources, with an

emphasis placed on the PBTs of concern for air deposition in the Great Lakes region. These projects should improve the ability to report and disseminate emissions inventory data.

- **Enhanced QA/QC for PBTs** - Projects that include an in-depth QA/QC for emissions inventories of PBTs of concern for air deposition in the Great Lakes region, particularly mercury, PCBs, and dioxin.
- **Emissions Inventory Process** - Projects to improve the Great Lakes States' capacity to develop and deliver complete emissions inventories. Improvements to emissions inventory estimation software is one such example.
- **Base Year Emissions Inventory** - Projects to refine a base year emissions inventory for mercury and dioxin in order to improve the ability to develop and assess spatial and temporal trends in the Great Lakes region.
- **Emission Factor Development** - Projects meant to improve emissions inventories through creation or improvement of emissions factors for poorly understood sources. For mercury, examples include improved estimates of emissions associated with processing and disposal of mercury-containing wastes, scrap yards, steel production, landfills, chlor-alkali plants, instrument production, and land application of sludges and residues that contain mercury. Improved emission factors for residential wood combustion would also be considered. Projects are also encouraged that incorporate the speciated emission factors from U.S. EPA's Information Collection Request for mercury from coal-fired power plants into a regional inventory. Projects will also be considered that re-evaluate regularly used emission factors.
- **Mercury in Products** - Projects to determine the emissions of mercury during the disposal process of mercury-containing product lines.

PRIORITY THREE: Atmospheric and Multi-Media Modeling

A longer-term priority of the strategy is to enhance the Great Lakes region's modeling capabilities in order to better understand the fate and cycling of pollutants of primary concern. In particular, the strategy seeks to link the results of models from different media, including air, water, sediments, and biota, in order to simplify and enhance the prediction of relative loadings from air and water to waterbodies and subsequent effects on human and ecosystem health. The strategy also seeks to utilize models in order to assess and identify the long-range transport of PBTs from sources outside of the Great Lakes, including contributions from regional, continental, and global sources.

The following activities are of particular interest:

- **Multi-media modeling** - Projects to model PBT transport, deposition, and bioaccumulation in a sentinel watershed.
- **PBT source apportionment** - Projects to combine short-term intensive monitoring with source apportionment modeling to determine a single source or a group of sources impact on the transport and deposition of PBTs (e.g. mercury and dioxin).
- **Regional TMDL modeling** - Projects that support the development of regional mercury TMDLs for the Great Lakes States.

PRIORITY FOUR: Assessment of Effects to Aquatic Life and Wildlife

Another longer term priority of the strategy is to assess the effects to aquatic organisms and wildlife from exposure to PBTs in the environment. Activities are encouraged to study the linkages between emissions, deposition and environmental effects of PBTs.

V. Conclusions

The priorities identified above will help guide the efforts of U.S. EPA, the States, and others to better understand the impacts of air deposition, ensure progress in reducing air deposition, and reduce the adverse effects associated with air deposition. Over the next 5 years, U.S. EPA will use the strategy to make and explain decisions about program research directions, relative priorities, and resource distributions.

It is expected that the priority activities for addressing air deposition will vary from over time as priorities change and the understanding of air deposition improves. For this reason, the priority activities will be revisited each year by the GLAD Core Group.

Appendix A

Annual Funding Process

Great Lakes Air Deposition (GLAD) Core Group: Invited members of the GLAD Core Group will consist of a representative from each Great Lakes State, U.S. EPA Region 5, U.S. EPA Region 2, U.S. EPA Region 3, the Great Lakes National Program Office, U.S. EPA's Office of Water Air/Water Coordinator, and U.S. EPA's Great Waters Program. Each GLAD Core Group member should preferably be appointed by a State Air Director or U.S. EPA Division Director. The responsibilities of the GLAD Core Group include:

- Identify group priorities yearly
- Promote RFP to scientific community
- Review all completed proposals
- Participate in proposal selection meetings

Early in each fiscal year, U.S. EPA Region 5 will host a meeting and/or conference call of the GLAD Core Group to revisit the priorities within the Great Lakes Air Deposition Strategy. At this meeting/call, the GLAD Core Group will identify priorities for the year's funding process, decide on a means for soliciting proposals, and determine applicable deadlines.

All proposals will be reviewed by the GLAD Core Group, along with appropriate technical experts. U.S. EPA Region 5 will make every effort to reach consensus on proposal selection, and will coordinate reviews through e-mails, conference calls, and/or meetings. All evaluations and recommendations from the GLAD Core Group and other technical experts will be seriously considered by U.S. EPA Region 5 when making final funding decisions. The GLAD Core Group will follow general principles to evaluate and prioritize all proposals which are detailed below.

Review Process: All proposals will be reviewed by the GLAD Core Group consisting of the U.S. EPA, the Great Lakes States, and other appropriate technical experts. Proposals will be evaluated based on the following general principles:

- Connection to the priorities identified in the strategy.
- Benefits to the entire Great Lakes region.
- Ability to build capacity in the Great Lakes region to assess the impacts of air deposition.
- Scientific/Professional merit.
- Leveraging of additional resources.
- Appropriateness of the budget
- Bias toward activities that lead to results.

Abstainment: The GLAD Core Group and other technical reviewers must abstain from reviewing their own proposals (or proposals affiliated with their organization).

Eligibility: Assistance (through grants, cooperative agreements, and interagency agreements) is available pursuant to Clean Air Act sections 103 and 105 for activities in the Great Lakes region and in support of the priorities identified. State pollution control agencies, other federal agencies, interstate agencies, accredited academic institutions, and other public or non-profit

agencies and organizations are eligible for funding.

Format: Proposals should be no more than six pages in length and must include the following components: (1) Relevance to Great Lakes atmospheric deposition priorities; (2) Problem statement; (3) Proposed work and outcomes; (4) Budget; (5) Key personnel; (6) Great Lakes region collaboration; and (7) Other funding sources. Succinct proposals are encouraged. Proposals selected for funding will be required to submit a full U.S. EPA grant application by July 15.

Proposal Requirements: Applicants who accept and receive funding will be required to submit semi-annual progress reports and a final project report. Awarded recipients may also be invited to deliver a presentation to U.S. EPA and other interested Federal and State agencies on project results. Applicants should also consider the Federal requirement that projects involving data collection require an approved Quality Management Plan (QMP) prior to commencing environmental data collection. Environmental data is defined as any measurements or information that describe environmental processes, location, or conditions; ecological or health effects and consequences; or the performance of environmental technology. Extra funds and extra time may need to be allotted for QMP development.

Quality Assurance. A Quality Management Plan (QMP) or sufficient documentation that describes the system, such as a Quality Assurance Project Plan (QAPP), must be submitted within 90 days of the grant award AND 30 days prior to commencement of any environmental data collection. The Recipient will adjust its implementation schedule accordingly. Costs associated with data collection are not allowable costs until the QMP or QAPP is approved by the ARD QA Manager.

Progress Reports. Semi-annual project progress reports shall be submitted electronically to the U.S. EPA Project Officer within 30 days of the end of the reporting period.

Draft Final Report. A draft Final Report will be submitted if requested by the U.S. EPA Project Officer.

Final Report. Both an electronic and paper version of the Final Report shall be provided to the U.S. EPA Project Officer for acceptance and approval at the completion of the project. The Final Report will, at U.S. EPA's discretion, be placed on U.S. EPA's Internet and/or Intranet site. The Final Report is subject to the Freedom of Information Act.

Project Documentation. The Recipient shall document, in writing and pictures, environmental progress under the project. Such documentation shall be submitted as part of progress reports and in the Final Report.

Payment. Payment of Federal funds shall be in accordance with the award agreement, up to 95% of the total allowable award. When the Final Report is delivered to the U.S. EPA Project Officer and approved, the remaining 5% of the Federal share of total allowable costs will be paid.

Meetings/Conferences. Time and travel costs along with participation in professional meetings and conferences funded under this agreement shall be approved by the U.S. EPA Project Officer in advance.

Subcontracting. No portion of this work shall be subcontracted, without the notification of and written approval by the U.S. EPA Project Officer.

Locational Information. Locational information (latitude and longitude) shall be reported for all areas of interest in this agreement (ex: sampling sites/areas, restoration sites/areas, etc.).

Data Reporting. All environmental monitoring data collected under this agreement shall be reported to ARD in spreadsheet format, preferably using Microsoft Excel.

Safety Manual. Lab and field activities conducted for the project on the U.S. EPA owned vessels Lake Guardian and Mudpuppy must be in accordance with provisions of the GLNPO Health, Safety, and Environmental Compliance Manual. Contractors and Recipients are required to have read the contents of the Manual prior to initiating field operations.

Disposition of Wastes. Disposal of all wastes will be in accordance with State and Federal regulations, and is the responsibility of the Recipient.

Project Clarifications/Revisions: Applicant may be contacted for clarification and for the purpose of negotiating changes in project terms and budgets.

Confidentiality: We expect that applicants will only submit non-confidential information, since external reviewers assist in evaluations and since information will be published on the Internet. 40 C.F.R. Part 2 discusses "public information", including procedures for claiming confidentiality (40 C.F.R. SS 2.203 and 2.204). Note that under Public Law No. 105-277, data produced under an award is subject to the Freedom of Information Act.

Notification: U.S. EPA will confirm proposal receipt within two weeks. Applicants will be notified about final funding decisions on or before June 15.

Cost-sharing: Currently not required under this funding process.

Indirect costs: U.S. EPA reserves the right to favor projects with lower indirect cost rates and the right to negotiate a lower indirect cost rate with the grantee's organization, if necessary.

Annual Schedule:

GLAD Core Group Planning Meeting/Conference Call . . . . . December
Draft RFP Sent to GLAD Core Group . . . . . January
Final RFP Issued . . . . . First Business Day of February
Second Notice for RFP . . . . . First Business Day of March
RFP Closes . . . . . Last Business Day of March
Proposal Review Period . . . . . April - May

Applicants Notified of Final Decisions . . . . . by June 15
Full Grant Packages Due . . . . . by July 15
Region 5 ARD Submits Awards to Grants Section . . . . . by August 1
Grants Awarded . . . . . by September 30